

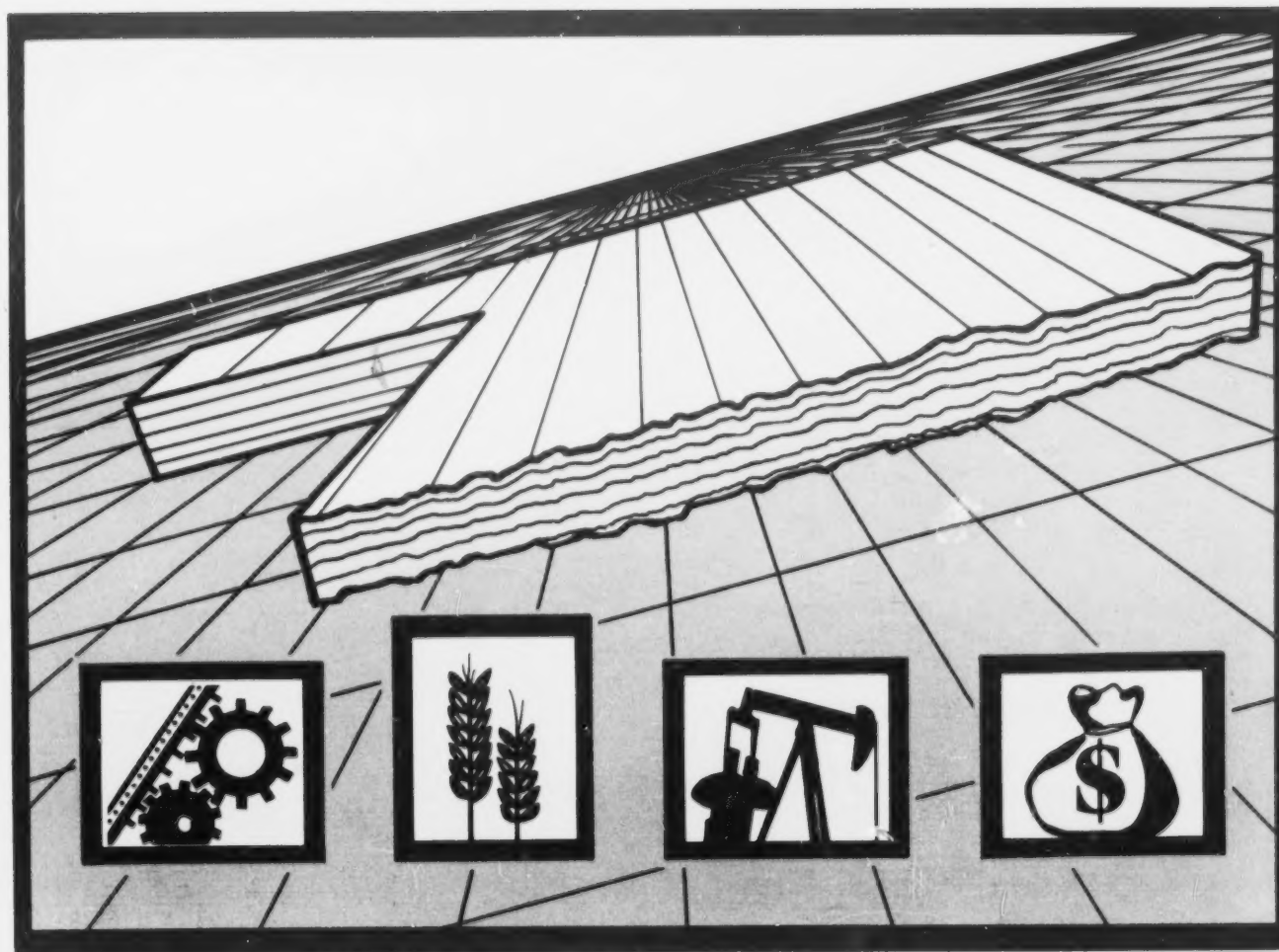
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OKLAHOMA BUSINESS BULLETIN

CENTER FOR ECONOMIC AND MANAGEMENT RESEARCH
COLLEGE OF BUSINESS ADMINISTRATION
THE UNIVERSITY OF OKLAHOMA

September 1989

VOL. 57, ISSUE 9



The *Oklahoma Business Bulletin* is published each month by the Center for Economic and Management Research, 307 West Brooks, Room 4, Norman, Oklahoma 73019-0450. September 1989, volume 57, number 9, ISSN 0030-1671. Second class postage paid at Norman, Oklahoma 73070. Subscription price per year is \$10.00. Postmaster: Send address changes to the *Oklahoma Business Bulletin*, 307 W. Brooks, Room 4, Norman, Oklahoma 73069.

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Address all manuscripts and correspondence to:

Oklahoma Business Bulletin
Center for Economic and Management Research
307 West Brooks, Room 4
Norman, Oklahoma 73019-0450

The *Oklahoma Business Bulletin* is published by the Center for Economic and Management Research, College of Business Administration, The University of Oklahoma.

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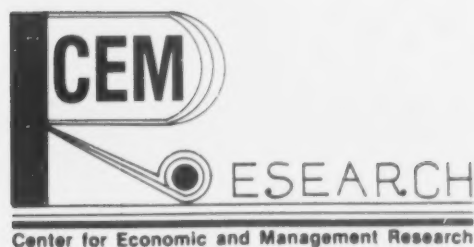


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SUMMARY OF INDICATORS

Category	6 Mos. '89	6 Mos. '88	June '89	Percentage Change	
				6 Mos. '89/'88	June/May '89
Personal Income (Monthly Average)					
Unadjusted (\$000,000)	3,786	3,562	3,828	6.3	0.3
Adjusted for CPI (\$000,000)	3,086	3,050	3,085	1.2	0.0
Crude Oil Production (000 bbl)^a	45,828	50,714	9,205	-9.6	-0.3
Natural Gas Production (000 mcf)^a	847,023	889,881	145,316	-4.8	-16.4
Industrial Power Sales (000,000 Kwh)^b	4,296	4,130	756	4.0	4.0
Total Bank Deposits (Monthly Average) (\$000,000)^c					
Demand	7,458	7,588	7,264	-1.7	-1.5
Savings	23,568	24,557	23,398	-4.0	-0.1
Savings and Loan Associations (\$000,000)					
Assets	10,762	8,555	10,696	25.8	0.2
Mortgage Loans Closed	251	277	43	-9.4	20.7
General Business Index	95.5	94.5	96.1	1.1	0.5

Note: Includes revisions.

^aFive months and May data. Natural gas includes casinghead gas.^bSales of larger privately owned utility companies.^cTotal deposits of all depository institutions.

SELECTED ECONOMIC INDICATORS

Category	6 Mos. '89	6 Mos. '88	June '89	Percentage Change	
				6 Mos. '89/'88	June/May '89
PERMIT-AUTHORIZED CONSTRUCTION					
Residential—Single Family					
Dollar Value (\$000)	145,540	137,083	25,844	6.2	-2.1
Number of Units	1,867	1,848	327	1.0	-4.4
Residential—Multi Family					
Dollar Value (\$000)	21,498	3,753	996	472.8	-92.9
Number of Units	492	214	65	129.9	-72.2
Nonresidential					
Commercial (\$000)	45,225	73,236	3,765	-38.2	-33.0
Industrial (\$000)	14,207	20,272	439	-29.9	-74.1
Institutional (\$000)	20,540	22,919	2,576	-10.4	-56.4
Nonbuilding					
Streets and Highways (\$000)	155,164	149,982	44,435	3.5	41.3
All Other Nonbuilding (\$000)	3,128	3,806	508	-17.8	-29.4
Total Construction (\$000)	405,302	411,050	78,563	-1.4	-8.5
EMPLOYMENT TRENDS					
Total Labor Force (000) ^a	1,517.0	1,529.5	1,546.6	-0.8	2.2
Total Employment (000)	1,422.3	1,421.0	1,459.2	0.1	2.6
Unemployment Rate (%)	6.3	7.1	5.7	—	—
Wage and Salary Employment	1,137.3	1,125.6	1,144.1	1.0	-0.2
Manufacturing (000)	163.6	161.0	164.9	1.6	0.7
Mining (000)	43.8	45.2	43.3	-3.1	-1.1
Government (000)	252.4	250.0	248.4	1.0	-2.5
Contract Construction (000)	33.0	33.9	34.6	-2.8	0.9
Services (000)	249.2	243.6	252.8	2.3	1.2
Retail Trade (000) ^b	217.0	211.4	219.8	2.6	-0.6
Average Weekly Hours (Per Worker)					
Manufacturing	41.2	41.1	41.8	0.2	0.7
Average Weekly Earnings (\$ Per Worker)					
Manufacturing	437.03	421.12	441.41	3.8	1.1
Contract Construction	415.67	424.40	401.14	-2.1	-3.2
Retail Trade ^b	190.34	188.89	193.71	0.8	2.9

Note: Includes revisions in some previous months.

^aCivilian Labor Force.^bExcluding eating and drinking places.

RETAIL TRADE IN METRO AREAS AND STATE (\$000)

Retail Trade					Percentage Change		
	6 Mos. '89	6 Mos. '88	June '89		6 Mos. '89/'88	June/May '89	
	Adjusted	Adjusted	Adjusted	Unadjusted	Adjusted	Adjusted	Unadjusted
OKLAHOMA CITY MSA							
Food Group	1,216,690	1,134,640	211,899	220,167	7.2	3.7	2.5
Apparel Group	86,387	87,373	15,438	14,016	-1.1	1.3	2.1
General Merchandise Group	393,136	374,854	67,042	66,862	4.9	1.8	6.7
Furniture Group	137,122	115,560	22,597	22,231	18.7	3.4	5.6
Lumber Group	80,033	89,443	12,504	15,171	-10.5	0.5	3.1
Auto Dealers	787,134	888,684	124,307	142,279	-11.4	1.8	11.7
Gasoline	111,145	101,739	18,882	20,077	9.2	0.0	4.1
All Other	361,608	382,171	60,238	61,555	-5.4	2.0	-3.3
Total	3,173,255	3,174,464	532,907	562,358	0.0	2.5	4.7
TULSA MSA							
Food Group	697,467	662,773	120,324	125,268	5.2	0.7	0.5
Apparel Group	74,539	81,873	13,371	12,279	-9.0	2.6	5.6
General Merchandise Group	340,561	330,755	60,720	61,054	3.0	8.0	10.0
Furniture Group	75,319	77,830	13,110	13,368	-3.2	5.7	12.5
Lumber Group	71,929	66,812	11,886	13,812	7.7	4.2	10.4
Auto Dealers	457,989	517,073	72,327	82,784	-11.4	1.8	11.7
Gasoline	91,314	83,586	15,513	16,495	9.2	0.0	4.1
All Other	64,514	69,924	11,390	12,358	-7.7	-6.7	-7.2
Total	1,873,632	1,890,626	318,641	337,418	-0.9	2.3	5.6
ENID MSA							
Food Group	58,398	54,740	10,457	10,966	6.7	8.1	14.5
Apparel Group	8,059	8,118	1,394	1,300	-0.7	-1.9	-9.4
General Merchandise Group	25,380	25,482	4,417	4,270	-0.4	7.1	2.0
Furniture Group	6,058	6,402	952	913	-5.4	6.1	-3.5
Lumber Group	8,139	7,917	1,367	1,556	2.8	14.2	15.3
Auto Dealers	45,054	50,874	7,113	8,142	-11.4	1.9	11.7
Gasoline	8,193	7,498	1,392	1,480	9.3	0.0	4.1
All Other	17,832	17,452	3,049	3,007	2.2	5.5	-11.0
Total	177,113	178,483	30,141	31,634	-0.8	5.5	6.9
LAWTON MSA							
Food Group	87,990	93,464	11,516	11,678	-5.9	-23.2	-27.9
Apparel Group	10,703	10,832	1,861	1,852	-1.2	9.1	15.0
General Merchandise Group	72,917	75,262	12,736	12,381	-3.1	6.6	3.0
Furniture Group	13,812	14,143	2,509	2,343	-2.3	4.3	0.3
Lumber Group	8,360	8,974	1,470	1,636	-6.8	4.6	1.6
Auto Dealers	60,037	67,781	9,481	10,852	-11.4	1.8	11.7
Gasoline	5,593	5,120	950	1,010	9.2	0.0	4.1
All Other	19,434	19,303	3,456	3,767	0.7	7.9	-2.6
Total	278,846	294,879	43,979	45,519	-5.4	-4.2	-5.8
MUSKOGEE AREA							
Food Group	68,889	63,660	11,639	12,067	8.2	0.2	-0.2
Apparel Group	11,685	10,349	2,061	1,905	12.9	3.9	-1.3
General Merchandise Group	23,669	23,975	4,294	4,039	-1.3	3.8	0.4
Furniture Group	7,147	5,977	1,252	1,263	19.6	8.0	11.2
Lumber Group	2,314	2,225	362	443	4.0	-5.0	4.0
Auto Dealers	37,819	42,718	5,985	6,843	-11.5	1.8	11.7
Gasoline	7,174	6,559	1,218	1,296	9.4	0.0	4.1
All Other	16,469	17,813	2,475	2,809	-7.5	-17.9	-14.9
Total	175,166	173,276	29,286	30,665	1.1	-0.3	1.3
STATE^a							
Durable Goods	2,853,581	3,132,746	459,735	515,919	-8.9	0.9	8.0
Auto Dealers	1,966,627	2,220,333	310,587	355,482	-11.4	1.8	11.7
Accessory Dealers	171,546	165,328	28,804	32,404	3.8	-1.7	0.0
Total Automotive	2,138,173	2,385,661	339,391	387,886	-10.4	1.5	10.6
Furniture	181,056	169,856	30,724	31,202	6.6	6.2	8.6
Household Appliances	107,274	118,844	17,468	17,742	-9.7	-1.8	1.4
Total Furniture and Appliances	288,330	288,700	48,192	48,944	-0.1	3.2	5.8
Lumber and Building Materials	268,616	278,879	42,578	49,782	-3.7	-2.7	-1.7
Hardware Stores	34,140	33,521	5,590	6,346	1.8	-4.3	-6.7
Total Lumber, Building Materials & Hardware	302,756	312,400	48,168	56,128	-3.1	-2.9	-2.3
Nondurable Goods	5,513,048	5,299,428	938,919	968,184	4.0	5.8	3.9
Apparel	294,016	303,054	51,295	47,317	-3.0	4.8	2.3
Drug Stores	259,464	248,331	42,148	40,881	4.5	-3.1	-7.3
Eating and Drinking Places	983,862	931,594	169,389	181,116	5.6	4.0	0.9
Food Group	2,226,407	2,141,132	377,037	390,935	4.0	1.1	-1.4
Gasoline	364,980	334,063	62,006	65,930	9.3	0.0	4.1
General Merchandise Group	1,046,797	979,003	177,923	177,592	6.9	5.0	3.1
Total Retail Trade	8,366,627	8,432,174	1,398,654	1,484,103	-0.8	4.2	5.3

^aTotal includes data for categories not shown in the table.

RETAIL TRADE IN SELECTED CITIES (\$000)

Retail Trade	6 Mos. '89 Adjusted	6 Mos. '88 Adjusted	June '89		Percentage Change		
			Adjusted	Unadjusted	6 Mos. '89/'88 Adjusted	June/May '89 Adjusted	Unadjusted
Ada	81,275	80,792	14,009	14,462	0.6	4.0	2.7
Altus	69,605	72,623	11,726	12,334	-4.2	-0.5	0.2
Alva	21,412	22,424	3,497	3,771	-4.5	1.1	4.3
Anadarko	27,613	28,705	4,349	4,690	-3.8	-3.3	-1.6
Ardmore	110,379	114,097	18,525	19,406	-3.3	1.1	1.8
Bartlesville	115,823	113,867	19,016	19,809	1.7	-1.9	0.4
Blackwell	19,003	20,188	3,151	3,345	-5.9	4.0	4.8
Broken Arrow	112,672	112,299	19,203	20,654	0.3	3.0	3.8
Chickasha	52,793	54,494	9,020	9,467	-3.1	2.3	2.5
Clinton	37,107	38,342	6,018	6,543	-3.2	0.3	5.3
Cushing	30,083	32,159	4,515	5,059	-6.5	-11.1	-7.8
Del City	61,337	63,234	9,781	10,929	-3.0	0.0	0.2
Duncan	81,605	88,893	13,568	14,313	-8.2	3.6	0.7
Durant	59,716	62,475	10,252	10,895	-4.4	3.7	7.3
Edmond	149,313	144,267	24,979	25,440	3.5	0.6	-0.2
Elk City	43,765	44,520	7,325	7,697	-1.7	0.2	1.4
El Reno	46,818	45,215	7,700	8,086	3.5	-0.5	0.6
Guthrie	30,906	30,788	4,824	5,172	0.4	-19.7	-20.2
Guymon	26,374	26,051	4,371	4,493	1.2	-0.5	-4.3
Henryetta	27,243	28,492	4,511	4,784	-4.4	-0.8	-2.6
Hobart	13,068	13,507	2,132	2,323	-3.2	-0.2	2.4
Holdenville	15,049	15,969	2,526	2,642	-5.8	1.3	1.7
Hugo	16,158	16,721	2,721	2,845	-3.4	1.9	1.8
Idabel	21,619	21,685	3,632	3,809	-0.3	2.4	3.7
Lawton	266,523	282,472	42,313	43,324	-5.6	-3.3	-5.6
McAlester	57,259	60,148	9,512	9,915	-4.8	1.5	-0.1
Miami	64,396	67,083	11,020	11,438	-4.0	2.2	3.4
Midwest City	200,339	209,259	34,114	34,905	-4.3	4.9	2.3
Moore	71,789	80,451	11,801	12,147	-10.8	-5.3	-5.0
Muskogee	167,941	167,911	28,181	29,334	0.0	0.8	1.9
Norman	357,537	362,506	62,282	66,370	-1.4	8.0	14.2
Oklahoma City	1,589,585	1,597,432	264,602	279,993	-0.5	2.8	6.1
Okmulgee	29,364	30,901	4,830	5,165	-5.0	1.0	2.2
Pauls Valley	24,022	24,689	4,078	4,271	-2.7	0.8	4.0
Pawhuska	9,669	9,735	1,679	1,731	-0.7	4.3	0.2
Ponca City	99,971	97,590	16,693	17,787	2.4	0.0	1.5
Poteau	26,630	27,314	4,399	4,660	-2.5	3.5	5.4
Sand Springs	50,380	49,518	8,565	8,853	1.7	0.2	-2.3
Sapulpa	73,871	74,246	12,435	12,977	-0.5	-1.0	-2.1
Seminole	32,264	34,504	5,504	5,778	-6.5	0.4	0.2
Shawnee	159,249	155,892	26,559	26,664	2.2	-0.6	-8.3
Stillwater	143,498	145,401	23,649	23,240	-1.3	0.7	-1.3
Tahlequah	43,752	44,553	7,285	7,574	-1.8	1.8	-1.9
Tulsa	1,422,343	1,437,813	244,685	257,298	-1.1	3.7	7.4
Watonga	10,175	9,960	1,660	1,771	2.2	-1.1	1.4
Weatherford	31,910	31,887	5,662	5,949	0.1	-0.2	0.9
Wewoka	6,218	6,546	1,034	1,118	-5.0	1.9	2.9
Woodward	65,092	66,877	10,827	11,368	-2.7	-0.4	-0.5
Total Selected Cities	6,274,513	6,366,499	1,054,718	1,106,598	-1.4	2.1	3.7



Sources for all tables: Local utilities companies; 10th Federal Reserve District Member Banks; Federal Home Loan Bank of Topeka; Oklahoma Employment Security Commission; United States Department of Commerce, Construction Statistics Division; Oklahoma Department of Transportation, *Progressive Report of the Transportation Director*; Center for Economic and Management Research, College of Business Administration, The University of Oklahoma. The data for all tables were compiled by Marjorie E. Earley, Statistician for CEMR and Brian Hickey, Research Assistant.

Printed by University Printing Services. Seven hundred copies were prepared and distributed at a total of \$500.00. Cost to the taxpayers of the State of Oklahoma: \$312.00. September 1989.

The *Oklahoma Business Bulletin* is published each month by the Center for Economic and Management Research, 307 West Brooks, Room 4, Norman, Oklahoma 73019. September 1989, volume 57, number 6. Second class postage paid at Norman, Oklahoma 73070. Postmaster: Send address changes to the *Oklahoma Business Bulletin*, 307 W. Brooks, Room 4, Norman, Oklahoma 73019.

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ENID AND LAWTON MSAs

Category	6 Mos. '89	6 Mos. '88	June '89	Percentage Change	
				6 Mos. '89/'88	June/May '89
ENID MSA					
Employment (Number)					
Labor Force ^a	27,962	28,967	28,625	-3.5	3.5
Total Employment	26,492	27,175	27,275	-2.5	3.5
Unemployment Rate (%)	5.2	6.2	4.7	—	—
Wage and Salary Employment	21,217	21,600	21,200	-1.8	1.0
Wholesale and Retail Trade	6,000	6,300	6,100	-4.8	0.0
Services	5,400	5,267	5,400	2.5	1.9
Government	3,517	3,500	3,400	0.5	0.0
Industrial Power Sales (000 Kwh)	224,131	232,936	38,052	-3.8	1.2
PERMIT-AUTHORIZED CONSTRUCTION					
Residential—Single Family					
Dollar Value (\$000)	538	355	140	51.5	-37.8
Number of Units	5	4	1	25.0	-50.0
Residential—Multi Family					
Dollar Value (\$000)	300	0	0	—	0.0
Number of Units	6	0	0	—	0.0
Nonresidential					
Commercial (\$000)	1,059	337	146	214.5	E
Industrial (\$000)	0	0	0	0.0	0.0
Institutional (\$000)	0	300	0	—	0.0
Nonbuilding					
Streets and Highways (\$000)	4,372	1,697	172	157.7	—
All Other Nonbuilding (\$000)	131	121	56	8.5	210.8
Total Construction (\$000)	6,401	2,810	513	127.8	99.9
LAWTON MSA					
Employment (Number)					
Labor Force ^a	48,238	49,050	50,050	-1.7	0.8
Total Employment	45,742	46,154	47,725	-0.9	3.2
Unemployment Rate (%)	5.2	5.9	4.6	—	—
Wage and Salary Employment	33,900	34,200	34,600	-0.9	1.2
Industrial Power Sales (000 Kwh)	97,217	94,954	17,851	2.4	4.9
PERMIT-AUTHORIZED CONSTRUCTION					
Residential—Single Family					
Dollar Value (\$000)	3,805	7,973	800	-52.3	184.7
Number of Units	38	104	9	-63.5	125.0
Residential—Multi Family					
Dollar Value (\$000)	0	180	0	—	0.0
Number of Units	0	6	0	—	0.0
Nonresidential					
Commercial (\$000)	1,772	2,733	571	-35.2	555.9
Industrial (\$000)	191	830	191	-77.0	—
Institutional (\$000)	0	1,300	0	—	0.0
Nonbuilding					
Streets and Highways (\$000)	567	1,848	0	-69.3	—
All Other Nonbuilding (\$000)	38	0	38	—	—
Total Construction (\$000)	6,372	14,864	1,599	-57.1	191.6

Note: Includes revisions.

^aCivilian Labor Force.

E = Exceeds 600 percent.

MUSKOGEE MA

Category	6 Mos. '89	6 Mos. '88	June '89	Percentage Change	
				6 Mos. '89/'88	June/May. '89
Employment (Number)					
Labor Force ^a	31,733	31,871	31,625	-0.4	1.0
Total Employment	29,229	28,717	29,400	1.8	1.3
Unemployment Rate (%)	7.9	9.9	7.0	—	—
Industrial Power Sales (000 Kwh)	84,300	88,409	14,909	-4.6	9.3
Port of Muskogee					
Tons in	56,732	48,838	12,208	16.2	9.9
Tons out	25,785	17,065	1,440	51.1	-49.9
PERMIT-AUTHORIZED CONSTRUCTION					
Residential—Single Family					
Dollar Value (\$000)	0	216	0	—	0.0
Number of Units	0	2	0	—	0.0
Residential—Multi Family					
Dollar Value (\$000)	0	0	0	0.0	0.0
Number of Units	0	0	0	0.0	0.0
Nonresidential					
Commercial (\$000)	0	400	0	—	0.0
Industrial (\$000)	0	0	0	0.0	0.0
Institutional (\$000)	0	0	0	0.0	0.0
Nonbuilding					
Streets and Highways (\$000)	803	582	0	38.1	—
All Other Nonbuilding (\$000)	0	5	0	—	0.0
Total Construction (\$000)	803	1,202	0	-33.2	—

Note: Includes revisions.

^aCivilian Labor Force.

TULSA MSA

Category	6 Mos. '89	6 Mos. '88	June '89	Percentage Change	
				6 Mos. '89/'88	June/May '89
Employment (Number)					
Labor Force ^a	339,200	339,500	348,200	-0.1	2.7
Total Employment	316,900	312,633	327,700	1.4	3.2
Unemployment Rate (%)	6.6	7.9	5.9	—	—
Wage and Salary Employment	298,933	294,350	302,900	1.6	0.8
Manufacturing	49,433	49,167	49,700	0.5	1.2
Mining	14,417	14,233	14,600	1.3	0.7
Government	36,983	37,117	37,300	-0.4	1.1
Wholesale and Retail Trade	70,400	70,500	71,700	-0.1	0.4
Average Weekly Earnings					
Manufacturing (\$ Per Worker)	443.38	446.70	445.88	-0.7	-1.5
Industrial Power Sales (000 Kwh)	1,150,217	1,069,259	203,190	7.6	6.8
Mortgage Loans Closed (\$000,000)	NA	NA	NA	—	—
Bank Deposits (\$000,000)^b					
Demand Deposits	935	906	921	3.2	-1.5
Time and Savings Deposits	2,089	2,162	2,087	-3.4	0.4
Air Transportation					
Passengers Enplaning (Number)	676,778	661,873	141,028	2.2	13.8
Passengers Deplaning (Number)	690,765	664,224	147,672	4.0	19.9
Freight (Tons)	13,004	10,444	2,314	24.5	2.5
Water Transportation					
Tulsa Port of Catoosa					
Tons In	328,605	286,682	48,910	14.6	-24.4
Tons Out	552,843	596,920	100,266	-7.4	171.9
PERMIT-AUTHORIZED CONSTRUCTION					
Residential—Single Family					
Dollar Value (\$000)	74,272	56,314	12,279	31.9	-18.0
Number of Units	932	734	155	27.0	-18.4
Residential—Multi Family					
Dollar Value (\$000)	82	1,298	0	-93.7	0.0
Number of Units	4	56	0	-92.9	0.0
Nonresidential					
Commercial (\$000)	15,663	32,229	1,734	-51.4	-46.3
Industrial (\$000)	11,163	11,405	248	-2.1	-83.9
Institutional (\$000)	10,541	8,448	384	24.8	-81.2
Nonbuilding					
Streets and Highways (\$000)	31,671	20,437	16,100	55.0	268.6
All Other Nonbuilding (\$000)	1,632	2,255	284	-27.7	-25.3
Total Construction	145,022	132,385	31,029	9.5	16.9
General Business Index	92.4	87.2	93.1	6.0	-0.5

Note: Includes revisions.

^aCivilian Labor Force^bDeposits of large commercial banks (accounted for 50 percent of all commercial bank deposits as of December 31, 1988).

NA = Not Available.

OKLAHOMA CITY MSA

Category	6 Mos. '89	6 Mos. '88	June '89	Percentage Change	
				6 Mos. '89/'88	June/May '89
Employment (Number)					
Labor Force ^a	489,200	496,833	497,400	-1.5	1.7
Total Employment	464,200	467,650	474,200	-0.7	2.1
Unemployment Rate (%)	5.1	5.9	4.7	—	—
Wage and Salary Employment	406,883	406,633	407,100	0.1	-0.3
Manufacturing	49,283	48,217	49,300	2.2	-0.4
Mining	10,283	12,000	9,700	-14.3	-4.0
Government	98,533	96,217	97,100	2.4	-1.2
Wholesale and Retail Trade	101,017	100,117	101,200	0.9	-1.4
Average Weekly Earnings					
Manufacturing (\$ Per Worker)	490.70	468.86	489.72	4.7	2.8
Industrial Power Sales (000 Kwh)					
	603,768	581,170	107,646	3.9	5.5
Mortgage Loans Closed (\$000,000)					
	NA	NA	NA	—	—
Bank Deposits (\$000,000)^b					
Demand Deposits	816	808	790	1.0	-2.4
Time and Savings Deposits	1,167	1,119	1,153	4.2	-0.1
Air Transportation					
Passengers Enplaning (Number)	739,222	712,346	148,623	3.8	8.9
Passengers Deplaning (Number)	745,131	718,198	151,396	3.8	12.2
Freight Enplaned (Tons)	3,737	3,297	661	13.3	17.9
Freight Deplaned (Tons)	4,756	4,921	818	-3.3	7.6
PERMIT-AUTHORIZED CONSTRUCTION					
Residential—Single-Family					
Dollar Value (\$000)	56,965	60,367	11,804	-5.6	17.8
Number of Units	750	848	148	-11.6	12.1
Residential—Multi-Family					
Dollar Value (\$000)	21,116	1,294	996	E	-92.9
Number of Units	482	70	65	588.6	-72.2
Nonresidential					
Commercial (\$000)	15,940	31,381	228	-49.2	-84.8
Industrial (\$000)	2,454	3,829	0	-35.9	—
Institutional (\$000)	5,641	8,593	450	-34.4	-81.8
Nonbuilding					
Streets and Highways (\$000)	10,986	39,487	768	-72.2	-75.3
All Other Nonbuilding (\$000)	1,146	1,228	114	-6.7	-57.4
Total Construction (\$000)	114,248	146,180	14,360	-21.8	-54.4
General Business Index					
	95.0	91.4	95.9	3.8	-0.3

Note: Includes revisions.

^aCivilian Labor Force.^bDeposits of large commercial banks (accounted for 36 percent of all commercial bank deposits as of December 31, 1988).

E = Exceeds 600 percent.

NA = Not Available.

Business Highlights

DAVID PENN

DATA FOR THE FIRST HALF of 1989 show that the Oklahoma economy may be settling down to a period of slower, but nonetheless positive, growth. The diminished rate of growth of the Oklahoma economy compared with 1988 is due partially to the slowing of the national economy and partially to the fact that the 1988 gains were accomplished from a diminished base.

Slower rates of growth appear in several indicators. The General Business Index, for example, showed little net change over the January-June period (graph). In addition, payroll employment rose by just 1.0 percent during the first half of 1989 from the first half of 1988 compared with a 1.9 percent gain from one year earlier. Manufacturing and services continued to show gains, but at a much slower pace. Mining employment fell by 3.1 percent during the first half, probably due to the unusually cold weather in February and very wet months of May and June. If this performance for payroll employment in the first half continues through the second half, 1989 will show less than half the increase achieved in 1988.

Retail sales show further evidence of a slowing state economy during the

first half. Total retail sales in Oklahoma fell by 0.8 percent in the first half of 1989 compared with the first half last year, due largely to the large drop in auto sales. As shown in the figure, auto sales are a major source of volatility in Oklahoma's retail sales, fluctuating substantially from month to month. Retail sales excluding autos are much more stable over time. Excluding auto sales, retail sales increased 3 percent from the first half of 1988.

Retail sales in Oklahoma City were flat during the first half while Tulsa, Enid and Lawton showed declines. Of the major cities tracked in the Indicators, only the Muskogee area showed an increase from 1988.

While the situation on average for the first half was slightly negative, indicators for the month of June hint that the second half of 1989 will probably show some improvement. Auto sales staged a rebound in June, increasing by 1.8 percent. And, despite losses in categories such as household appliances, lumber and building materials, and drug stores, June retail sales rose a seasonally adjusted 4.2 percent; the biggest gain of the year. Only time will tell whether June marks the beginning of a new and higher trend for retail sales or whether the month was an aberration.

Further, very recent improvements in

the labor market were demonstrated by falling unemployment rates. The 5.7 percent rate of unemployment for the state in June was the lowest rate for that month since 1982 and is close statistically to the U.S. rate for civilian workers of 5.3 percent.

Two recently released sets of data also deserve brief mention in the Highlights. Data collected and analyzed by the Center for Economic and Management Research for the Oklahoma Department of Commerce show that the cost of living is generally lower in Oklahoma than on average in the U.S. In 1988, for example, the cost of living in seven cities—Oklahoma City, Tulsa, Norman, Stillwater, Lawton, Muskogee and Enid—averaged just 93.4 percent of the U.S. cost of living as measured by the U.S. Consumer Price Index. Major categories included in the Oklahoma index are food, housing, utilities, transportation, health care and miscellaneous goods and services.

Of these categories, housing costs in Oklahoma were the lowest compared with costs in the U.S. Due to slack demand for residential real estate, housing costs for Oklahoma households averaged just 81 percent of U.S. average housing costs in 1988. On the other hand, health care costs in Oklahoma were 2.3 percent higher

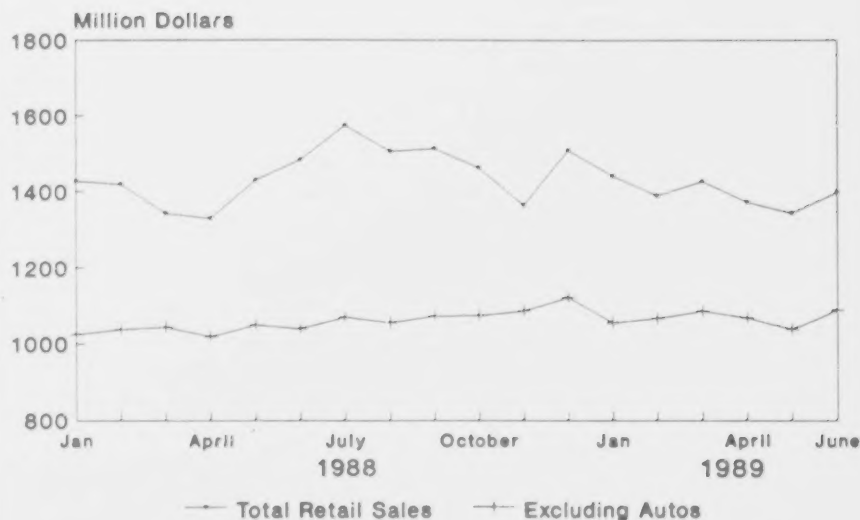
than the U.S. average. Additional details are available from the Center for Economic and Management Research.

The second set of data deserving mention are preliminary figures for state per capita income released by the U.S. Department of Commerce. These figures show that Oklahoma's income per capita rose 5.3 percent in 1988. By contrast, U.S. per capita income gained 6.2 percent. Of the states that surround Oklahoma, three states (Texas, Arkansas and Missouri) experienced gains greater than Oklahoma's. However, no state in the region grew as fast as the U.S. average.

Total personal income per person in Oklahoma averaged \$13,269 in 1988, compared with \$16,444 for the U.S. Oklahoma ranked 38th in the nation in 1988, one notch higher than in 1987 and the same ranking as in 1986. The 1988 ranking for the state ends a period of five years during which Oklahoma's relative standard of living fell every year. Thus, the slight improvement in Oklahoma's ranking suggests that the state's income per capita has stabilized relative to that of other states.

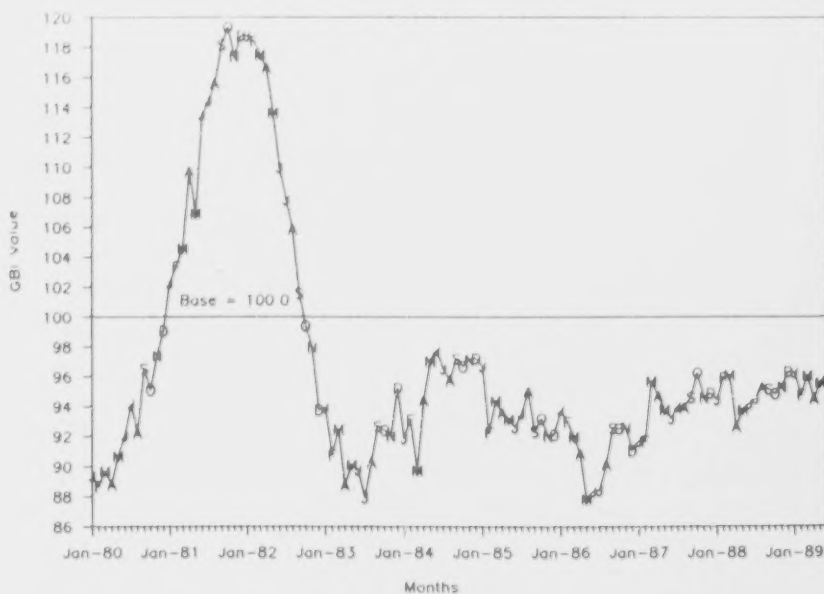
David Penn is Assistant Director for the Center for Economic and Management Research.

Seasonally Adjusted Monthly Retail Sales Oklahoma, 1988 - June 1989



Data: CEMR

Oklahoma State General Business Index January 1980 through June 1989



An Analysis of the General Business Index

CRAIG KNUTSON

THE FOLLOWING IS AN analysis of the economy for Oklahoma and its two largest metros during the 1st quarter 1989. The analysis will cover seven subsectors of the economy, with the subsector carrying the greatest amount of weight first, followed by the remaining subsectors in decreasing importance to the GBI. A look at the 2nd quarter 1989 is offered based upon preliminary data and professional intuition.

Energy

The Energy Subsector declined 2.1 percent from the 1st quarter of 1988 and was off 1.2 percent from the 1st quarter of 1987. This quarter's decline represents the third consecutive quarterly decline for this subsector (when compared to the same quarter, previous year), and selected energy data through May and June should force the subsector down for a fourth consecutive decline next quarter. Once again, every indicator fell when compared to the 1st quarter of 1988, with seismic crew activity and intent-to-drill permits off the most (-31 percent each). That is particularly depressing for those in the energy patch, because it signals that activity will most likely be weak for the remainder of the year. With rig

activity averaging less than 100 for the month of June, the signals those two leading indicators have been sending out appear to be quite accurate. While torrential rains distorted the rig count somewhat in June, May's average rig count of 114 continued a downward trend started late last year. Suffice it to say, Oklahoma's energy sector has problems, and those problems are likely to continue for, at least, the remainder of the year.

While oil prices (Oklahoma Sweet) moved steadily upward from \$16.00/barrel to \$19.50/barrel in the state during the 1st quarter, the 2nd quarter has been much more volatile. Oil prices posted by the major purchasers in state started the quarter at \$19.50, moved as high as \$20.25, as low as \$18.50, and ended the quarter at \$19.75/barrel. Those types of prices, despite their movement, should have generated much higher rig activity, especially when compared to price:rig trends over the past couple years. Again, discounting the weather conditions for June, the relationship between prices and rigs is weakening, at least in the state of Oklahoma.

This is not surprising as report after report informs the domestic producer (especially the independent) that exploration budgets are on the rise, but

the targets are offshore or overseas. While Phillips' domestic exploration budget was increased due to a joint venture with several foreign companies, most majors (including Phillips) have a disproportionate amount of their budget offshore or overseas. Such investment does little to employ Oklahomans in Oklahoma or generate severance tax collections for the state. As the State Finance Director (Alexander Holmes) recently pointed out, "just six years ago, \$1 of every \$6 to the state's general fund came from oil taxes. For this year and next, it will be about \$1 in every \$25." Given the production and price forecasts over the next several years, the gap may become even larger.

Drilling completions were off 33.8 percent in the 1st quarter of 1989 nationally. Oil production in Oklahoma was off almost 20 percent in the 1st quarter and fell to 7.652mb/d nationally in March, 8.2 percent below 1988's total and matching production levels not seen since the 1960s! So, domestically produced supply continues to plummet, demand continues to rise, and, guess what, imports do too. We are now importing about 44 percent of our crude oil needs, and several reports have determined that our oil import rate could reach the 55-60 percent level

before the year 2000. The IPAA said recently that for the first time since 1977, annual petroleum imports are forecasted to exceed domestic crude oil production. Through May, Petroleum Information estimates that imports have risen 12.5 percent over the same five month period in 1988. To add further volatility to the situation, almost 48 percent of all oil imports into the U.S. in 1988 came from OPEC countries.

OPEC has very quietly captured more market share, and their primary weapon has been low prices. OPEC, which supplies a third of the world's oil, has agreed on a higher output ceiling (19.5mb/d), yet still the price remains around \$20.00. Why? Demand continues to rise and is expected to grow about 2 percent per year through the 1990s. With reserves nearly twice as expensive to replace in the U.S. as in the rest of the world, satisfying that increased demand apparently won't fall upon the shoulders of the domestic oil industry. With OPEC members sounding more and more like free marketeers ("It makes more economic sense to set production ceilings according to supply and demand forces"), look for prices to remain volatile, but low. With a new production ceiling of 19.5 mb/d recently agreed to by OPEC, members hope to better balance supply and demand in the 2nd half of 1989. The fact that they pumped an estimated 21.3 million barrels/day in June makes one wonder whether their intentions are sincere!

Before we leave the world of oil, it is important to remember that Oklahoma still has vast amounts of proven oil reserves, anywhere from 6-8 billion barrels. That oil is recoverable with advanced recovery technology, BUT, with the majors investing outside the state (or inside the state, but in the gas market), the burden of recovery has fallen upon the small operators and independents. Unfortunately, they don't have the "deep pockets" and research capabilities of the majors. A most perplexing problem, and one that isn't likely to be resolved without much higher prices in the future. The domestic energy industry (Oklahomans,

in particular) has to keep in mind that most members of OPEC are convinced that relatively low prices are in their best interests in the long run. OPEC doesn't want to spur oil exploration in other areas or lose customers to alternative energy sources. As Robert Horton, Managing Director at British Petroleum, recently remarked: "In the short run, cheap oil keeps down natural gas and oil. In the longer run, these and others — including our ex-otic old friends like solar, shale, wind-mills and the atom — curb excess greed on the part of oil."

Things continue to improve in the "gaspatch." March gas prices in the state came in just under \$1.90/mcf and the majors and independents continue their exploration activity in the Arkoma Basin in southeast Oklahoma (the world's richest natural gas reservoir). Through the first four months of calendar year 1989, severance tax collections off the sale of natural gas have accounted for 66 percent of the total (oil representing the other 34 percent). The term "gaspatch" truly is more representative of Oklahoma's energy market. Unfortunately, even with the recent surge, prices are still not high enough to boost U.S. and Oklahoma drilling activity. Some companies have begun to gear up for more natural gas drilling, hoping for higher prices this winter. But many in the industry feel that it would take a price of \$3 "to really say 'let's get moving.'"

According to both private sector and governmental estimates, the natural gas resource base is "virtually inexhaustible." Unfortunately, the replacement rate for natural gas (new gas found versus gas produced) has fallen to 44 percent, even below the rate for the depressed oil industry. As one operator recently noted: "There is plenty of natural gas to meet demands well into the next century, but higher prices are a must to ensure adequate supplies." The more things change, the more they stay the same!

One very important issue was addressed during the 2nd quarter, and that was a bill that called for the

decontrol of the natural gas industry. Proponents of decontrol have been complaining for years that the market needed to be deregulated (or at least less regulated) than it has in the past. They have maintained that the most effective energy policies are those that do not interfere with the way in which energy prices are set and do not attempt to regulate how energy is used. If the bill becomes law, the remaining one-third of the natural gas still being regulated will be deregulated, with all gas deregulated by 1993. The President supports the intent of the legislation currently in Congress and has vowed to sign the bill into law. While this country still does not have an "energy policy," it appears that steps are being made incrementally to improve the domestic climate in which gas and oil must compete. While the environmental benefits of increased natural gas use are well documented, gas has suffered from a poor transportation environment; there's plenty of distribution infrastructure, it's the agreements and regulations between those who have and want and those who'll deliver. Only time will tell, but the trends are more promising than they've ever been.

Manufacturing

The Manufacturing Subsector was up 1.3 percent over 1st quarter 1988 and a sizeable 7.3 percent from 1987 levels. Both employment and weekly hours worked posted positive movements from last year, with employment up a seasonally-adjusted 2.2 percent and hours up 0.1 percent. However, the tax collections from the sale of industrial machinery, parts and equipment (IMPE) fell 17 percent, holding growth within this subsector down. Much of that decline came from the oil field equipment portion, which the Tax Commission has now merged with the IMPE class. That decline distorted the recent overall gains seen within the durable goods manufacturing sector. In fact, the Bureau of Economic Analysis' release of 4th quarter 1988 personal income numbers showed that manufacturing earnings in Oklahoma expanded

13 percent (in current dollars) from 4th quarter 1987, while the U.S. figure expanded only 6.7 percent over the same time period. In the durable goods portion, the gain was even more significant: up 18.1 percent vs. 7.4 percent nationally. That gain is probably not attributable to the production of pipe, pump, valves and rigs (i.e. the energy industry). Overall, the growth in manufacturing has been healthy and nonenergy-based.

May's manufacturing employment level (163,900) is almost 2,000 above last May and 8,000 above May 1987's level, signifying that the growth in this sector, while slow, has been steady. In fact, you'd have to go back to May 1985 before the comparison to May 1989 was negative. The trends in the two metros, while still positive, are not as strong, signifying that outstate manufacturing growth has been more pronounced. Cities like Anadarko, Ardmore, Blackwell, Commerce, Hugo, etc. have all received announced or actual manufacturing investments, as well as several cities within the two major metros and Lawton. The bulk of that growth has come in the Machinery category, but not oil field! The remainder is in the General Industrial and Electric and Electronic categories. While the data is very scant, Oklahoma has probably not taken full advantage of the weak U.S. dollar, which means that opportunities abound, especially with the State's new Foreign Credit Insurance Association program and OSU's Center for International Trade Development. According to the State's Department of Commerce, over \$300 million in investment and 5,100 new manufacturing jobs were announced in the 1st half of this year in Oklahoma. While down from last year's record level, these numbers suggest that the manufacturing growth in Oklahoma is far from over.

The key to Oklahoma's manufacturing future — as with this country's — is to build and provide high quality goods and services more efficiently than others. In the past few years, the relative decline in the U.S. dollar against other currencies has helped

repair the damage of the five years of a relatively strong dollar. But "playing global currency swings is hardly the route to renewed manufacturing strength." As was recently pointed out in *The Wall Street Journal*, 20 years ago U.S. manufacturers produced 82 percent of the nation's T.V.s, 88 percent of its cars, and 90 percent of the machine tools. Today, we make virtually no T.V.s, have lost 30 percent of the auto market, and 50 percent of the machine tool market. Furthermore, it is highly unlikely that we will regain much (if any) of the market share we've lost, even with fundamental retooling.

New management techniques and the application of improved technology have been the answer in those domestic plants that have restructured their productive activity. We should remember that currency exchange rates, much like energy prices, are highly volatile and, for the most part, unpredictable. If you don't want to build an economy around highly volatile energy prices, why would you want to around similarly volatile exchange rates. Japan, Germany, etc. have demonstrated that quality sells regardless of the negative fluctuations of exchange rates. With the dollar steadily rising since December of 1988, we are slowly losing one of our strongest advantages. While the trade deficits have been showing steady improvement (down to \$8.3 billion in April!), they can reverse themselves, as have the currency rates. Our short term policy objective at the national level should be a renewed and coordinated effort to push down the value of the dollar. Our immediate and long term objective must be ranking first in worldwide economic competitiveness. Today, we're in third place; only with a retooling of both management technique and new technology can we expect to retain and/or recapture our market share. That retooling must take place in Oklahoma and become the rule not the exception.

Consumer Demand

Despite improvements in many of the

nominal (current dollar) tax and consumer numbers, this subsector continues to be a drag on the economy and GBI. The Consumer Demand Subsector fell over 4 percent from last year, due almost exclusively to weakness in the Apparel portion of the subsector. State sales tax collections were off an inflation-adjusted 2.9 percent from the 1st quarter of 1988, while General Merchandise tax collections rose 5.2 percent for the quarter. Sales tax collections returned to both Oklahoma City and Tulsa fell as well, as did the retail trade numbers in each metro. However, the 1st quarter was a relatively weak one overall, and with the Arts Festival, Air Show, the National Square Dance Convention (> 16,000 strong), the Centennial Celebration, and the start of the Olympic Festival all happening after March 31, look for much stronger numbers in the 2nd quarter for Oklahoma City. The August meeting of the National Conference of State Legislatures will have a very strong impact (along with the general improvement within the economy) on Tulsa's retail numbers. Thus, look for both metros (as well as the state) to get a boost from this sector of the economy for at least the next two quarters.

The issue of inflation is a concern to both economists and noneconomists alike. Referring back to the previous column, if our numbers had not been deflated by a "national CPI" that rose over 4.8 percent from last year, this subsector would have had a positive impact on the GBI. I have expressed consternation over the use of a national CPI for years, arguing that Oklahoma remains in a deflationary bubble, caused primarily by depressed housing values and relatively low transportation costs. A research project currently under way at the University of Oklahoma seeks to establish CPI values for the major metropolitan areas of the state. Their preliminary findings seem to support the notion that Oklahoma is, indeed, not contributing to the 5 percent YTD inflation rate reported nationally. If our dollar-denominated retail numbers were

inflated instead of deflated, the true status of Oklahomans' purchasing power would be more accurately represented. And, of course, the GBI would benefit as well!

Interest rates, producer prices, consumer prices, and consumer borrowing all expanded in the 1st quarter and, despite those rises, consumer confidence in the economy continued to expand! The steady rise of interest rates over the past year had a significant impact on both housing and auto sales, although the auto industry did offer rebates and cut-rate financing programs. U.S. auto sales were off in both the 1st and 2nd quarters of 1989, yielding a 6.24 percent drop through the 1st half of the year. Furthermore, the Big Three continue to lose market share, with their combined share of cars sold in June of this year dropping to 68.1 percent from 69.9 percent last year. Thus, both the annual selling rate and market share figures have fallen. That does not bode well for the dealerships or for the manufacturers in the 2nd half of this year, as production plans are being scaled back. Metro Oklahoma City auto dealers, on the other hand, posted a 5.6 percent increase in the 1st quarter, with 2nd quarter numbers still not published.

With total personal income rising and consumer confidence remaining relatively strong (117.5 in June 1989 vs. 115.7 in June 1988), it is difficult to forecast gloomy times for the remainder of 1989. As Fabian Linden, Executive Director of the Conference Board's consumer research center, recently stated: "Job security and sustained buying power of the weekly paycheck are contributing substantially to the consumer's sense of well-being. As long as the consumer remains in good spirits, there is faint likelihood that the economy will take a bad turn." With the Oklahoma's General Revenue Fund rising 28.4 percent in May (April's business) and April tax collections returned to both Oklahoma City and Tulsa up 7.7 percent and 3.6 percent, respectively, Oklahoma's business and consumer sectors are making healthy contributions to the state's fund. With

more people working (and working at higher levels), more disposable income should be available to circulate in the economy. If April's business is any indication, the 2nd quarter will, indeed, be a strong one.

Construction

The Construction Subsector was off a scant 0.6 percent in the 1st quarter signifying, at long last, some healing taking place. In fact, reports in the Oklahoma City metro have surfaced that such "upscale" locations as Oak Tree (Edmond), Nichols Hills, and parts of Norman are having "building booms!" The limited supply of high dollar homes, high per capita income, and the "quality of life" found in these locations make them the exception, not the rule, in this state's real estate market. The environment is still quite depressed. One need only to look at the portfolios of HUD and many of this state's thrifts to confirm the softness.

Residential permit activity in the 1st quarter for the state and both metros was actually UP, with the largest increase occurring in the Oklahoma City metro (up 24 percent). What continues to drag this subsector down is the lack of activity in the nonresidential side (off 8.2 percent in the state) and the poor performance of sales tax collections from the sale of building material (down 5.9 percent across the state). The nonresidential picture is even more depressed in metro Oklahoma City, with a 41.6 percent decline, while Tulsa actually posted an inflation-adjusted 1.9 percent increase. Keep in mind that with overall building at decade-low levels, wild monthly (and even quarterly) fluctuations can occur given the base from which the comparisons are drawn. Perhaps the best indication of where construction is in this state can be found in the employment numbers for May 1989. With 34,200 working in the Construction industry, one has to go back to 1967 to find a May value below that level! As I've repeatedly stated in this space, when supply and demand are not balanced, bad things

will happen; and they will continue to happen until that balance returns.

As mentioned previously, rising interest rates hurt home sales nationwide, with existing home sales falling each month in the 1st quarter and continuing that trend into the 2nd quarter. In fact May's decline was the lowest level in 16 months. New single family home sales declined two of the three months of the 1st quarter, but, with mortgage rates easing at the start of the 2nd quarter, sales rebounded and posted two consecutive monthly increases. Despite those increases, home sales are still below last year's levels. The mortgage rate declines have been steeper in the ARM market than the fixed market, but both have declined, providing renewed hope for both the industry and the prospective homeowner public.

Oklahoma City and Tulsa have not followed that pattern. Oklahoma City home sales have exceeded the previous year's levels for each of the first six months of the year, while Tulsa posted a similar trend. While mortgage rates have been high in Oklahoma as well, what hasn't risen (and for some time now!), is the value of the structure being purchased. In virtually every geographic market, and especially in the major metros, sales have been rising while the value of those homes sold declines. The rare exception are those few "high dollar" subdivisions where larger homes are being built and/or sold at higher values. According to several national surveys, not only are Oklahoma City and Tulsa among the best places for first-time buyers, but they are among the lowest in housing market growth (fourth and second from the bottom, respectively) and resale value (\$52,300 and \$60,500, respectively)! With continued job creation and a plethora of highly affordable residential space available, housing affordability has become one of Oklahoma's chief economic development/marketing tools. Those who have relocated from the east and west coasts are the real beneficiaries, and remain our best spokespeople for bottom line, cost of living savings available in Oklahoma.

As mentioned at the outset, nonresidential activity is relatively nonexistent, and the nonbuilding sector, which buoyed this industry for several years, is also weak. Minor occupancy rate increases in the two metros have caused a slight downward movement within the office markets (e.g. from 29.2 percent to 27.7 percent), but the environment is still weak. The best news is found in the new building permit data ... where there is none. Refurbishment/remodeling has put some new space on the market, but fortunately, overall space has been absorbed more quickly. Consensus among the "experts" is that three things are occurring: virtually no new space coming on line, fewer relocations of businesses out of the metros, and existing business expansions within the market. We need more of the former and latter and none of the in-between. Supply/Demand Imbalance is still in effect in nearly all Oklahoma nonresidential markets.

Agriculture

This subsector continues to post sizeable gains, despite a recent slow down among its two major industries. For the 1st quarter, however, inflation-adjusted wheat prices 38.3 percent above last year's level and a whopping 53.3 percent from 1987 levels. Beef prices were up a scant 0.9 percent from last year, but up 11.3 percent from 1st quarter 1987. The primary concerns during the 1st quarter were the continued drought conditions in the Midwest and its impact on all types of crops (especially wheat) and the declining herd size and its impact on beef prices to the consumer. Those issues are still very real as we enter the 3rd quarter.

Estimates made in the spring called for wheat stockpiles falling below the 500 million bushel level by June 1990, their lowest level since 1973. Drought conditions in the Kansas, Western Oklahoma and the Texas Panhandle sent most estimates (quantity and quality) down. With worldwide demand for wheat continuing to rise, the inventory

would be taken down. While the final tabulations are still being made due to record June rainfalls around the state, the estimated number of bushels for 1989 will fall 15-20 percent below last year's levels. Fortunately, due to the lateness in harvesting (too much rain) and the wheat orders from both Russia and China for additional wheat, prices rose dramatically in the 2nd quarter. Through mid-June, Oklahoma's wheat price has stabilized in the \$4.00-4.10 range, about \$1.25/barrel ahead of last year's level! As we enter the 3rd quarter, worldwide demand has escalated above previous forecasts, the harvested supply and quality of that harvest are likely to come in under the previous forecasts, therefore, agricultural income should post some sizeable gains in the 2nd and 3rd quarters of this year.

The beef industry, which accounted for 53 percent of all agricultural income in this state last year (and 97.5 percent of all meat animals), saw its prices rise steadily during the 1st quarter and drop through the 2nd quarter. Oklahoma's beef herd expanded 2 percent last year and income was up over 10 percent. The prospects for another good year were strong based upon increases demand and a shrinking nationwide herd size. Those prospects may yet materialize, but, for the most part, the 2nd quarter news about beef has revolved around the exportation of more beef to Japan (and elsewhere) and genetic improvements in future beef cattle. According to the research in this area, the world's population is seeking a higher quality diet, which means that there will be a continued, gradual change toward higher value-added and processed products, including meats. Oklahoma, through OSU's agricultural research, is an ideal candidate to invest in value-added processing and genetic research . . . and is doing so very effectively.

The near term future for agricultural income in this state remains strong. Prices remain high, farmland values continue to rise, and overall farm credit conditions in Oklahoma are much stronger than they have been in several

years. Barring another attack from mother nature or a sudden drop in demand for our primary agricultural products, look for continued strength from the farm belt. But, also remember, that agricultural earnings, despite their recent strength, represented only 3.5 percent of total earnings in the State of Oklahoma in the 4th quarter of 1988! Perspective is important.

Financial

Something shocking almost occurred within this subsector; a positive aggregate value was almost registered. Seasonally- and inflation-adjusted loan closings at state thrifts posted a 16.3 percent over the 1st quarter of 1988. Unfortunately, loan commitments fell and total deposits were off significantly from the year earlier. Any increase in the overall subsector would have to be viewed in a dim light given the net negative worth of the thrift industry, which today is much smaller and still relatively unhealthy. Oklahoma City thrifts were "less weak" than were Tulsa's, but less than half of the state's total are generating positive cash flow.

While the nation's banks earned \$7.3 billion in net income during the 1st quarter of 1989, the nation's savings and loan industry recorded a \$3.4 billion loss, rivalling the \$3.9 and \$4.1 billion losses of the 1st and 2nd quarters of 1988. No honest end is in sight. Not only are property values in some areas still falling (e.g. Oklahoma), but thrifts have been squeezed because their cost of funds have been rising faster than their mortgage rates. Pointing out once again the insidiousness of high interest rates. In Oklahoma, the 38 surviving S&Ls had a cumulative net income of -\$30.7 million. Over 55 percent of them had negative net income and 84 percent of that net income loss came from the ten largest S&Ls (based upon asset size).

The banking situation, relative to its sister institutions, is much brighter in Oklahoma. Rubottom, Dudash, Assoc.'s Bank Stock Index (BSI) rose to its highest level in almost a year in June, 16.7 percent above March's level

and 23 percent above year end 1988's level. However, everything being relative, the BSI, which represents the market value of Oklahoma's two largest publicly-traded banks, is still 15.2 percent below June 1988. The bottom, as forecasted six months ago, was reached and the overall condition of banks in this state continues to improve. In fact, combined positive net income was realized by BOK and BOMA in the 1st quarter of 1989 for the first time since 1st quarter 1987; the forecast among those brave enough to do so is for a second consecutive quarterly rise.

Perhaps the best news in the financial industry is interest rates have come down, which means borrowing will be less costly. That is especially important to the debt-ridden thrift industry, whose hope for improvement was dashed with each rise in interest rates over the past year. Most economists now forecast that if we are to have a "soft landing" as opposed to a recession, interest rates must fall further. The real trick is for the Feds to keep them there long enough for the financial industry to recover. That would probably have to be a record length of time, and given the volatile nature of interest rates, an unrealistic expectation. Nonetheless, banks and thrifts will continue their combined march toward higher/reaching positive net worth. With all the real estate that still must be disposed of in this state, look for the banking industry to lead the way.

General

The General Subsector posted a rare increase, rising not only 2.1 percent over last year's level, but 0.4 percent over 1987's level. The primary contributors were many. In the employment area, the unemployment rate continued its fall in the 1st quarter (and has dropped again in April and May — 5.8 percent and 5.9 percent). More significantly, though, is the solid improvement seen in wage and salary employment, which is up a seasonally-adjusted 1.4 percent from last year and a stronger 3 percent from 1st quarter

1987. That means jobs are being generated. The Services industry continues to be a primary contributor to that rise, up 3.6 percent from 1988 and 9.3 percent from 1987. Keep in mind that the Services industry represents almost 22 percent of total wage and salary employment in this state (almost equal to government). In addition bankruptcies continued to fall (although the rate of decline has lessened) and personal income continued to rise. The strongest improvement came in Unemployment Insurance Claims, which fell 20.6 percent from last year. Fewer filings, more workers, and higher income; sounds like a logical sequence of growth to me.

Nationally, the 1st quarter was bizarre. Inverted yield curves (between short and long term interest rates) signified a recession was either here or imminent. Yet, both the budget and trade deficits were moving toward the 0 line. But the Fed continued to push interest rates higher, hurting auto and home sales as well as the thrifts, and the U.S. dollar began to show strength. That worried manufacturers and economists alike for fear that our export-based economy would lose what ground it had gained back over the past three years. The Commerce Department then told us that, although factories were running at 85 percent of capacity, both real and wage inflation was rising, and that foreign investors continued to hold a large lien on our future. Despite, these trends, GNP grew at a 4.4 percent annual rate in the 1st quarter! If Oklahoma did not have to balance its budget, I suspect our 1st quarter growth rate would have been much higher than the 0.2 percent posted through the GBI.

Nearly all the statistics reveal a softening in the economy. In fact, if one looks at quarterly GNP first differenced from 1987 forward, one can see an unmistakable slowing of growth. So, the Fed is not solely responsible for all the softness, just the most recent four quarters. Given their options, I think most would agree that they have successfully walked the tightrope, although I don't believe they've reached

the end! As the 2nd quarter came to a close, stocks, bonds, interest rates and the U.S. dollar were all at higher levels than 2nd quarter 1988. For the first two indicators, that is good; for the latter two, that isn't. The good news, though, is that both interest rates and the dollar have begun to drop and will need to continue their drops to keep the economy from falling any further.

The keys to where the economy is headed in the 2nd half are tied to domestic monetary policy and international economic strength. The rise in the U.S. dollar has many concerned, especially manufacturers. In fact, for the first time since the 1987 stock market crash, the National Association of Manufacturers "considers a direct appeal to the Fed for lower rates, to bring down the dollar and to avoid choking off domestic growth." Many companies fear they will "lose international market share" if the dollar does not turn back down. The Fed, on the other hand, worries that cutting rates would fan inflation. Milton Friedman asserts that inflation, over the next two years, will actually decline; based upon that, implementing a policy of lower interest rates seems prudent. Mr. Friedman contends that changes in inflation are dominated by changes in the quantity of money for up to two years out. Since the growth in M2 has been declining, he expects that inflation "is likely to decline sharply over the next several years." *The Wall Street Journal's* semiannual survey of 38 economists shows that consensus has inflation declining, but only ever so slightly. Let's hope that Uncle Miltie is correct.

There is another school of thought, however, that says a stronger dollar is good for America. The keys to that thinking are: (1) a higher dollar lowers the prices of imports and discourages domestic producers from raising theirs, keeping inflation down; and (2) a higher dollar will encourage foreigners to continue to hold U.S. assets, easing pressure on interest rates. As with any theory, it needs to be well tested in the world economy; sounding logical alone does not make the next loan payment. A lower, stable dollar would, at least

for the next several years, benefit our economy most. As Jane Little, research economist at the Federal Reserve bank of Boston, recently wrote: "It's apparent that large, protracted changes in exchange rates can transform an economy. The American economy is leaner, more efficient, and more globally minded than it was a decade ago." Retooling for quality takes investment and time. We (and foreigners who invest here) are making the investments; what we need is a bit more time.

Perhaps the best hope for continued domestic expansion is found outside the U.S. Forecasts for continued growth in exports rely heavily upon several factors: a low dollar, increased investment in new plant and equipment, improved productivity, and a healthy international economy. In other words, no matter how productive you may be or how much quality you put into the goods and services you produce, if you don't have a buyer, you don't have a sale. And, if you don't have a sale, ... The Organization for Economic Cooperation and Development (OECD) offered a "sunny picture of the world economy," although did stress the perils of "creeping inflation" and "protectionist trade fortresses" among the major industrial countries. OECD growth rates are expected to stay around 3 percent for the remainder of this year and next. But in Germany and Japan, strong markets for our exports, the growth patterns are even stronger. For instance, in the 1st quarter of 1989, West Germany's economy grew at 12.5 percent annual

rate; Japan's was right behind at 9.1 percent. While those countries will not continue at that pace through the rest of this decade, their growth will outstrip that of other OECD countries. They have the cash, therefore, they have the best potential for making the purchases.

Conclusion

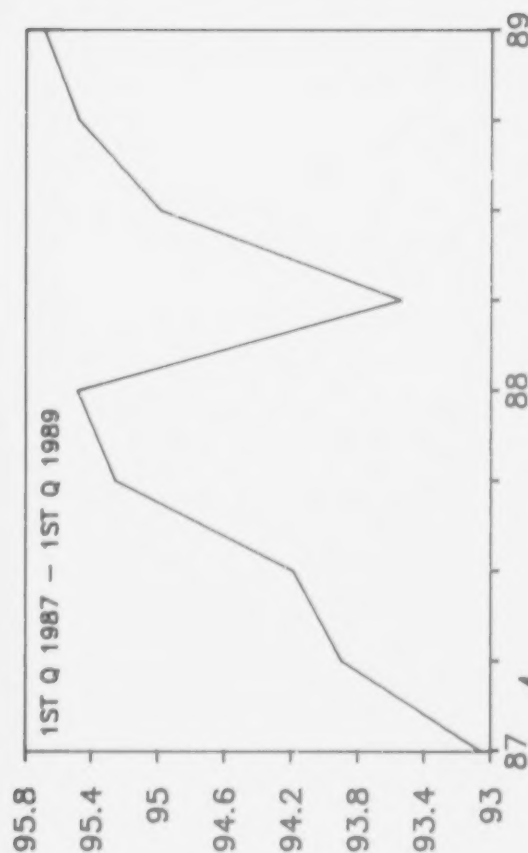
Despite the doom and gloom forecasted by most, I stand by my forecast made in 1988 of NO RECESSION in 1989 or 1990. As has been remarked frequently, economic expansions don't die of old age, they are usually killed by poor policies, most frequently monetary policies. The Fed's "credit easing" policy appears to be the correct policy to employ; let's just hope it wasn't too late! Regardless, the nation must learn to live with slower growth. Oklahomans have had to adjust their expectations during the decade of the 1980s, learning that heavy reliance upon commodities over which you have no control (of either production or prices worldwide) can be devastating. Oklahoma's employment and income gains over the past two years have not come from traditional industry sources. As time passes, we realize that, as our economic base diversifies, we look more and more like the national economy. We are becoming more cyclical (or less counter-cyclical) with the U.S. economy. Therefore, if the U.S. economy is going to slow, guess what we in Oklahoma are likely to do? While I expect the 1st quarter GBI to

represent the low point of the year, I find no economic basis for growth rates to exceed those of the U.S. So "don't worry" about slow growth, just "be happy" that we have growth!

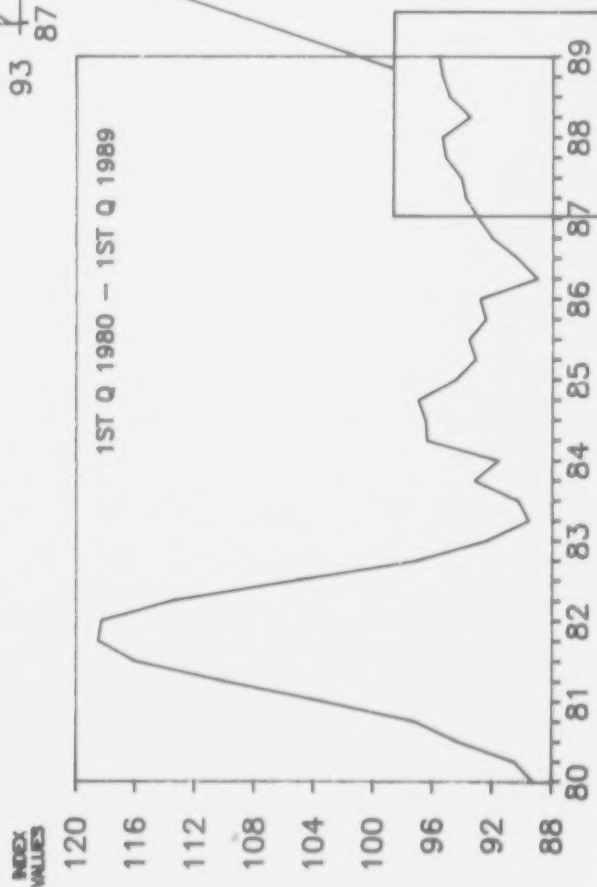
The internationalization of economies has forced us to change; our national debts have forced us to become more competitive, yet to rely upon the "cash rich" to fund more and more of these "competitive-enhancing" investments. This is the Marshall Plan in reverse, only our economy is not nearly so devastated as were Japan's and Europe's. While we were building new plants in the late 40s and early 50s, the foreign direct investment we're seeing in this country in the 80s is primarily mergers and acquisitions of existing manufacturing plants, not the construction of new facilities. The Commerce Department estimates that "foreign investment in the U.S. now amounts to \$304.2 billion — almost as much as the \$329.9 billion total that U.S. companies have invested overseas." Since most of our assets were acquired years ago, they state that: "given those accounting effects, we probably still have two to three times as much investment abroad as foreigners have here." It's in their best interest, just like it was (and still is) in our best interest, to help rebuild this economy. If we're not healthy, who is going to buy all those BMWs and SONYs . . . Brazil, Mexico, India?

Craig Knutson is Staff Economist for Southwestern Bell Telephone Company.

OKLAHOMA GENERAL BUSINESS INDEX



- 1980 - 1989 GBI AVERAGE = 97.0
- 1ST Q 1987 - 1ST Q 1989 AVERAGE = 94.6
- OKLAHOMA'S ECONOMIC DEVELOPMENT MESSAGE OF CENTRAL LOCATION, TRUCK HUBBING, AND DISTRIBUTION HAS NOW REACHED THE EUROPEAN CONTINENT
- MORE THAN 11,000 CONSTRUCTION JOBS WILL BE GENERATED THROUGH THE CONSTRUCTION OF 4 NEW TURNPIKES ... ALL BONDS (\$555M) HAVE BEEN SOLD

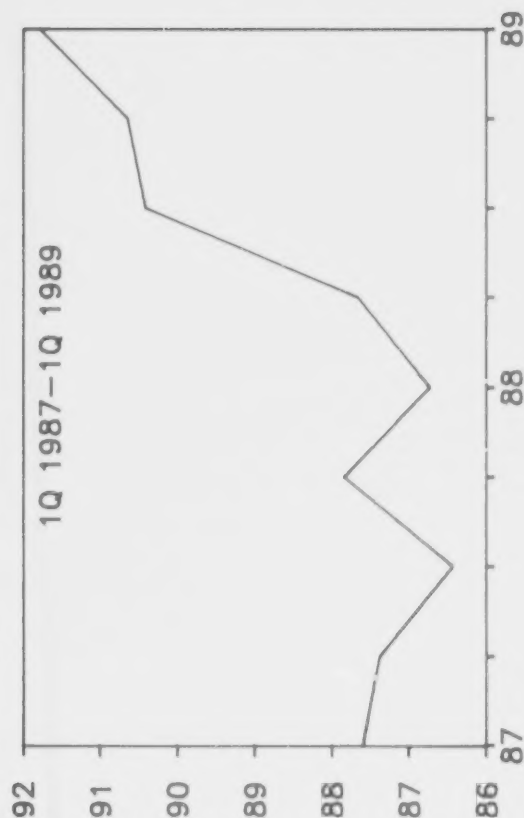


1Q 1980	4Q 1988	1Q 1988	1Q 1987
AVERAGE	AVERAGE	AVERAGE	AVERAGE
VALUE	VALUE	VALUE	VALUE
95.7	95.5	95.1	93.1
%	%	%	%
CHANGE	CHANGE	CHANGE	CHANGE
0.2	0.2	0.6	2.8

¹ COMPARED TO CURRENT QUARTER

SOURCE: SWIFT ECONOMIC DEVELOPMENT DISTRICT/CEDAR

TULSA GENERAL BUSINESS INDEX



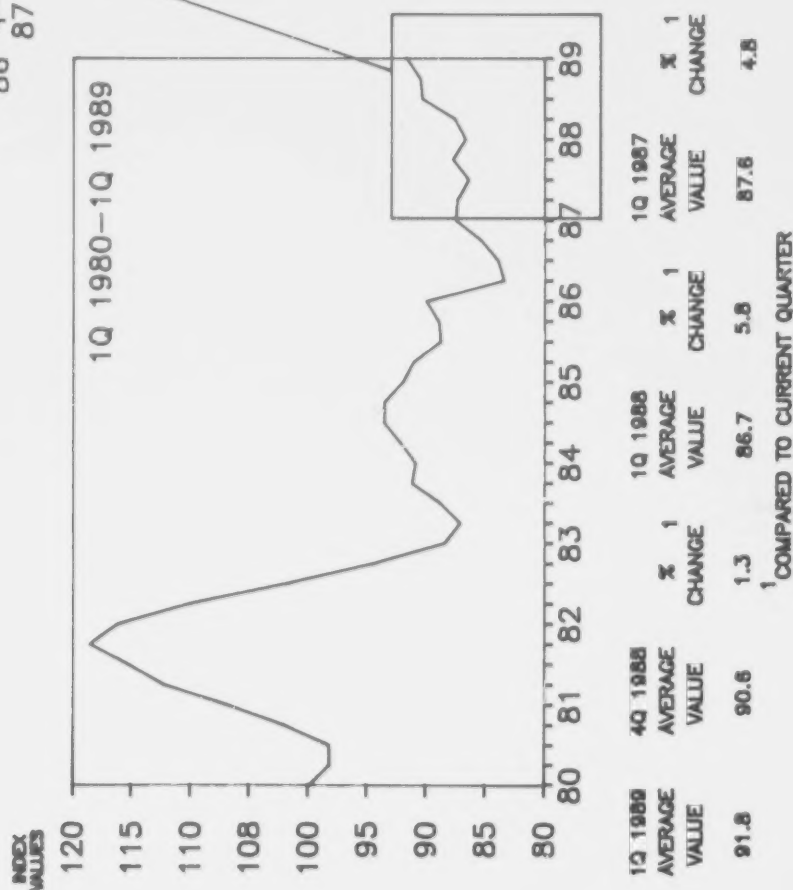
● 1980 - 1989 GBI AVERAGE = 94.6

● 1ST Q 1987 - 1ST Q 1989 AVERAGE = 89

● KIMBERLY CLARK AND STATE FARM ARE MORE THAN "ANNOUNCEMENTS", WITH PLANT CONSTRUCTION (\$250M/\$40M) AND HIRING (250/450 JOBS) WELL UNDER WAY

● THE AVIATION INDUSTRY CONTINUES TO EXPAND IN TERMS OF EMPLOYMENT (AMERICAN AIRLINES) FACILITIES (TULSA INTERNATIONAL AIRPORT), AND EQUIPMENT (AMERICAN AIRLINES' SABRE COMPUTER SERVICES)

SOURCE: SMWT ECONOMIC DEVELOPMENT DISTRICT/CEUR



1Q 1980
AVERAGE
VALUE
91.8

4Q 1988
AVERAGE
VALUE
90.6

1Q 1988
AVERAGE
VALUE
86.7

1Q 1987
AVERAGE
VALUE
87.6

% 1
CHANGE
1.3

% 1
CHANGE
5.8

% 1
CHANGE
4.8

% 1
CHANGE
4.8

% 1
CHANGE
4.8

% 1
CHANGE
4.8

¹ COMPARED TO CURRENT QUARTER

Oklahoma High Technology Industrial Performance, 1982-1987

GERALD M. LAGE
TABITHA DOESCHER

Introduction

THE POPULAR EMPHASIS of economic development research, policy initiatives and community action programs in the 1970s and early 1980s was clearly on recruitment and encouragement of high technology manufacturing establishments. As pointed out in a publication highlighting Oklahoma's status in the interstate competition, the underlying rationale for this concentration was "...the pervasive notion that growth of high technology or knowledge-intensive economic activity is a dominant component of future economic success. Such activities are viewed as having high growth potential, substantial employment benefits in terms of numbers of workers and quality of work satisfaction, few negative environmental impacts, international market potential, the ability to attract linked activities, and the potential for inducing accompanying improvements in infrastructure, public services, and quality of life." (Doescher, 1985)

The purpose of this article is to investigate the performance of Oklahoma's high technology sector from 1982 to 1987. The early benchmark study, which used data from 1982, revealed that Oklahoma's high

tech sector, as measured by employment shares in designated industries, was small relative to the surrounding states and the nation. The study also indicated that the sector was dominated by a small number of manufacturing industries in the areas of Aircraft and parts; Communication equipment; Office, computing and accounting machines; and Petroleum refining.¹ Only Petroleum refining, Aircraft and parts, and Agricultural chemicals had state employment shares exceeding the national average. The desire and, by consensus, the need to grow and diversify in the preferred high tech sectors was readily endorsed as part of state economic development plans of the period. (Olson, 1986)

Unfortunately, the results of the present study indicate that Oklahoma has not succeeded in the goal of expanding employment in the high technology industries. Employment in the industries most often defined to be in the high technology category fell by 6.5 percent from 1982 to 1987. This loss is smaller than the 14.6 percent decline in total Oklahoma manufacturing employment and may be less than corresponding losses elsewhere; but, nevertheless, only one of the four industries that dominate this sector gained employment.

The high technology sector, which employed 23 percent of the manufacturing workers in 1982, accounted for one-third of the recorded new job announcements as collected by the Oklahoma Department of Commerce. Thus, there would appear to be considerable reallocations and new activity even as actual employment declines in many industries exceed the anticipated job additions. The Office machines and computer industry is the one large and growing high technology industry in the state, but its growth was barely large enough to offset declines in other selective, technology-intensive industries including Communication equipment, Aircraft and parts, and Petroleum refining.

What can be observed is that a substantial share of Oklahoma's high technology industries is linked to the energy market and these industries, almost uniformly, have contracted since 1982. These losses tend to outweigh other gains that may occur in certain other new and expanding businesses. The results do not indicate that Oklahoma has been misled with advice to place emphasis on the sector, but they do indicate that the five years of regional recession during national recovery have prevented any significant net gains from appearing.

U.S. and Oklahoma Economic Environments

The period of the early and mid-1980s was not an easy time for local and regional industrial development in Oklahoma. The decade began with the repercussions of the second oil-price rather, two closely-spaced national recessions at the start of the decade, and a lengthy period of severe world-wide recessions in most advanced developed economies. National and world-wide growth was reestablished in the mid-80s and the dollar finally peaked in February of 1985.² Somewhat later the loss of export markets finally stopped as U.S. and Oklahoma producers recoiled, at least where the state's competitive advantages were the greatest.

The state's economic growth, which had been generally overheated and which had certainly specialized in oil and gas activity for most of the late seventies, was abruptly halted in mid-1982, and for the next half-dozen years little progress could be seen in net measures of economic activity.

Selected highlights of the recent growth pattern of major manufacturing industries are shown in Table 1. The severity of the competitive pressures on the state's manufacturing sector is shown by the loss of 23,500 manufacturing jobs from the nearly 185,000 full and part-time workers employed in manufacturing in 1982. Among the state's largest industries (those with employment shares above five percent), only Printing and publishing, Stone,

clay, and glass products and Transportation equipment did not lose workers over this period. The Fabricated metal products and both the Electrical and Nonelectrical machinery industries each lost large numbers of jobs.

Over this period, however, other economic reallocations and dislocations were occurring as indicated, although roughly and incompletely, by Oklahoma Department of Commerce's new job announcements. These reports indicate that nearly 35,000 new jobs from new plants and expansions of existing establishments were planned and publicly announced even as the net job count was falling substantially.² Industries most favored with anticipated jobs relative to the size of the industry in 1982 (see final column) were

TABLE 1
Oklahoma and U.S. Industrial Performance

SIC	Industry	U.S. Real GNP Growth Rate ^a 1980/1986 (%)	U.S. Export Share ^b 1986 (%)	U.S. Import Share ^c 1986 (%)	Oklahoma Employment Share ^d 1982 (%)	Oklahoma Employment Growth ^e 1982-87 (#)	Oklahoma Job Announcements/ 1983-88 (#)	Jobs from Expansions (%)	Ratio of Announcements to 1982 Jobs ^f
20	Food and kindred products	1.7	3.9	4.2	8.2	-940	2,918	50	1.01
22	Textile mill products	0.9	3.9	8.4	0.6	11	349	91	1.72
23	Apparel and products	-0.4	2.1	24.5	5.1	-966	3,059	47	1.69
24	Lumber & wood products	0.9	5.5	10.2	1.9	-207	918	28	1.36
25	Furniture and fixtures	1.8	1.5	10.6	1.2	-361	262	61	0.62
26	Paper & allied products	4.0	4.7	7.3	1.7	202	923	98	1.55
27	Printing & publishing	2.3	1.2	1.4	6.5	305	853	72	0.37
28	Chemicals & allied products	2.9	11.9	6.7	1.9	-179	537	18	0.82
29	Petroleum & coal products	-0.2	3.6	9.8	4.7	-1,609	67	15	0.04
30	Rubber & miscellaneous & plastics	5.5	4.1	6.9	6.0	-402	2,203	73	1.05
31	Leather & leather products	-5.8	7.3	56.7	0.3	-24	5	40	0.05
32	Stone, clay & glass products	0.8	3.2	8.3	5.7	163	1,290	45	0.64
33	Primary metal products	-4.6	3.6	16.8	2.7	-1,005	516	90	0.54
34	Fabricated metal products	0.7	4.5	6.0	12.2	-8,169	1,914	48	0.44
35	Non-electrical machinery	10.1	20.1	16.9	21.3	-8,803	5,581	74	0.74
36	Electronic equipment	5.2	10.8	18.5	6.8	-3,341	4,788	89	2.00
37pt	Motor vehicles & equipment	4.7	9.3	26.4	{9.3	{3,057	{6,306	{81	{1.92
37pt	Transportation equipment except MV	4.1	18.1	8.1					
38	Instruments	5.3	16.5	16.0	2.0	-1,072	778	83	1.08
39	Miscellaneous manufacturing	6.0	9.3	37.5	1.9	-194	2,031	9	2.95
	Total Manufacturing	3.4	8.2	12.9	100.0	-23,534	35,298	65	1.00

^aAverage annual rate. Source: U.S. Department of Commerce, Bureau of Economic Analysis, GNP Estimates.

^bPercent exports to shipments. Source: U.S. Department of Commerce, unpublished data.

^cPercent imports to new supply (imports plus shipments). Source: see footnote b.

^dPercent of total manufacturing employment. Source: Bureau of Economic Analysis, full and part-time employment, unpublished.

^eSource: see footnote d.

^fSource: Oklahoma Department of Commerce, Annual Listing of Announced New and Expanded Manufacturers and Processors, annual 1983-1988.

^gRatio of percent share of 1983/88 jobs announced divided by percent share of 1982 manufacturing employment.

Miscellaneous manufacturing, Electrical machinery and Transportation equipment. The Textile mill products, Apparel and Paper products industries also reported relatively numerous new investments.

High Technology Definitions

Three analytical definitions of "high technology industries" have become standards for comparative analyses of industrial performance. (Riche, et al., 1983, and Lage, 1985). These alternative definitions are detailed in the headings of Table 2.

The core high tech sector consists of 28 manufacturing industries with relatively high ratios of both research and development (R&D) expenditures and technology-oriented workers. The high tech R&D sector is a select group of just six industries which have extremely high ratios of R&D expenditures to net sales (ratios exceeding twice the national average and which are above the chosen cut-off of 6.2 percent). These industries include Drugs; Office, computing and accounting machines; Communication equipment; Electronic equipment and accessories; Aircraft and parts; and Guided missiles and space vehicles.³

Finally, a technology-based sector is defined for industries in which the proportion of technology-oriented workers is at least one and one-half times the average for all industries. The sector is a broad collection of the 28 core high tech manufacturing sectors plus 20 other industries, not all of which are manufacturing, which utilize relatively large numbers of scientific and technical workers. They do not necessarily engage in considerable R&D activities nor offer high technology products or services.

Oklahoma Industrial Performance

For comparative purposes, we note that between 1982 and 1987 Oklahoma's total nonagricultural employment fell from 1,216,900 workers to 1,105,000. This represents a loss of 9.2 percent in total and an average of 1.9

percent per year. (Oklahoma Employment Security Commission) Total manufacturing employment, according to OESC data, fell from 180,600 in 1982 to 154,300 in 1987—a loss of 14.6 percent total and 3.1 percent per year.

High Tech Sector:⁴ Oklahoma's core high tech sector of 28 manufacturing industries (those indicated by * in Table 2), which had 41,500 workers in 1982, netted a loss of 6.5 percent of these workers by 1987 to 38,900. Nevertheless, with the substantial losses in total manufacturing, the share of high tech employment actually rose from 23.0 to 25.2 percent of all manufacturing workers. Similarly, workers in the high tech sector accounted for 3.5 percent of all nonagricultural workers in 1987, up just slightly from the 3.4 percent share in 1982.

In terms of public job announcements, 11,500 of the 35,300 jobs announced from 1983 through 1988 were in the high technology sector. Thus, one-third of the announcements of new and expanded activities were in this sector compared to the 20-25 percent of actual manufacturing jobs.

When individual industries in the high tech sector are reviewed, four industries dominate: Petroleum refining (SIC 291); Office, computing and accounting machines (SIC 357); Communication equipment (SIC 366); and Aircraft and parts (SIC 372). In 1982 they employed about 65 percent of all high tech sector workers; by 1987 their share had risen to 68.5 percent. Within the group, the share of Aircraft and parts doubled from 11 to almost 22 percent, while Communication equipment fell from 15 to 10 percent of the sector's employment.

Industries in the high tech sector with average annual growth in excess of 2.0 percent per year include: (number shown in parentheses is average annual growth)

SIC 282—Plastic materials and synthetics (14.2%)

SIC 357—Office, computing & accounting machines (13.0%)

SIC 289—Miscellaneous chemical products (12.2%)

SIC 386—Photographic equipment and supplies (10.6%)

SIC 284—Soap, cleaners and toilet goods (7.1%)

SIC 367—Electronic components and accessories (2.1%)

and a combination sector consisting of SIC 348 (Ordinance and Accessories), SIC 351 (Engines and Turbines), and SIC 383 (Optical Instruments and Lenses), which had to be aggregated because of data disclosure restrictions. In fact, this group grew by nearly 150 percent or 20 percent per year. Both the Office, computing and accounting machines and Electronic component industries had employment exceeding 1,000.

Industries with average annual job losses of 6.0 percent or more include:

SIC 381—Engineering, laboratory, scientific and research instruments (-24.9%)

SIC 286—Industrial organic chemicals (-16.7%)

SIC 382—Measuring & controlling instruments (-16.5%)

SIC 355—Special industrial machinery, except metalworking (-16.5%)

SIC 261—Elec. transmission & dist. equip. (-12.2%)

SIC 287—Agricultural chemicals (-10.3%)

SIC 366—Communication equipment (-10.0%)

SIC 365—Radio & TV receiving equipment (-9.2%)

SIC 283—Drugs (-7.0%)

Of these, Communication equipment, Electric transmission and distribution equipment, and Measuring and controlling instruments employed more than 1,000 workers in 1982.

When reviewing the impact of new and expanded job announcements in individual industries within the high tech sector, over half (67.9 percent) came from just two industries, Communication equipment (SIC 366) and Aircraft and parts (SIC 372). The bulk (89.4%) of these new jobs were attributable to the expansion of existing

TABLE 2
Oklahoma's Technology-Based Industries

SIC CODE	Industry	Oklahoma Employment ^a 1982 (#)	Employment Change ^b 1982-1987 (#)	Job Announcements ^c 1983/1988 (#)	Jobs from Expansions (%)	Number of Establishments ^d 1986 (#)	Change in Establishments 1982/1986 (#)
	Mining						
131	Crude petroleum and natural gas	41,030	-15,902			1,229	21
	Construction						
162	Heavy construction, except highway & street	10,770	-5,512			487	-46
	Manufacturing						
*281	Industrial inorganic chemicals	1,230	-146	48	54	27	8
*282	Plastic materials and synthetics	70	66	0	—	3	-2
**283	Drugs	300	-91	15	0	11	2
*284	Soap, cleaners, & toilet goods	210	86	144	21	13	0
*285	Paints and allied products	330	-28	10	100	12	-2
*286	Industrial organic chemicals	20	-12	154	0	6	3
*287	Agricultural chemicals	880	-369	0	—	11	-3
*289	Miscellaneous chemical products	340	265	87	0	26	-4
*291	Petroleum refining	7,600	-965	0	—	15	-7
301	Tires and inner tubes	7,060	-1,455	1,048	100	7	-1
324	Cement, hydraulic	530	-60	0	—	5	1
*348	Ordinance & accessories, excluding vehicles & guided missiles	50	n.a.	100	0	3	0
*351	Engines and turbines	720	n.a.	257	69	6	0
352	Farm and garden machinery	760	-445	66	50	25	-5
353	Construction, mining & material handling machines	18,080	-8,530	2,133	96	132	-28
354	Metalworking machinery	710	-135	56	46	40	-7
*355	Special industrial machinery, except metalworking	980	-583	31	100	33	-3
356	General industrial machinery	6,880	-2,067	1,048	58	95	-3
**357	Office, computing and accounting machines	4,580	3,876	1,102	73	24	5
358	Refrigeration & service industry machinery	1,860	98	732	39	21	-8
*361	Electric transmission and distribution equipment	1,260	-603	78	0	7	2
*362	Electrical industrial apparatus	1,560	-84	477	69	16	-1
363	Household appliances	90	4	52	98	2	1
364	Electric lighting & wiring equipment	400	90	80	44	12	-2
*365	Radio & TV receiving equipment	480	-183	33	100	9	2
**366	Communication equipment	6,310	-2,592	3,632	95	26	3
**367	Electronic components & accessories	1,880	202	226	73	43	10
*369	Misc. electrical equipment & supplies	160	-28	251	93	21	8
371	Motor vehicles and equipment	6,830	4,707	1,205	87	67	-17
**372	Aircraft and parts	8,980	-1,147	4,214	84	24	4
**376	Guided missiles & space vehicles	0	0	0	—	0	0
*381	Engineering, laboratory, scientific, and research instruments	320	-264	0	—	9	-2
*382	Measuring & controlling instruments	2,420	-1,144	60	83	23	-3
*383	Optical instruments & lenses	60	n.a.	0	—	4	0
*384	Surgical, medical & dental instruments	590	-10	316	72	30	4
*386	Photographic equipment & supplies	230	151	320	100	6	-2
	Combination 348, 351 and 383	—	2,065	—	—	—	—
	**Total High Tech R&D	22,050	248	9,189	87	128	24
	*Total High Tech	41,560	-2,668	11,555	82	408	22
	Total Tech-Based	84,760	-10,461	17,975	81	814	-47

TABLE 2 (continued)
Oklahoma's Technology-Based Industries

SIC CODE	Industry	Oklahoma Employment ^a 1982 (#)	Employment Change ^b 1982-1987 (#)	Job Announcements ^c 1983/1988 (#)	Jobs from Expansions (%)	Number of Establishments ^d 1986 (#)	Change in Establishments 1982/1986 (#)
Utilities							
483	Radio and TV broadcasting	2,860	12			131	14
489	Communication services, N.E.C.	1,500	20			108	7
491	Electric services	7,950	650			132	-22
493	Combination electric, gas and other utility services	0	513			9	3
Wholesale Trade							
506	Electrical goods	3,960	-1,118			344	23
508	Machinery, equipment & sup- plies	29,340	-12,123			1,799	-70
Services							
*737	Computer & data processing services	2,320	966			226	-4
*7391	Research & development laboratories	130	524			17	0
891	Engineering, architectural, and surveying services	6,920	-447			629	9
892	Noncommercial educational, scientific, and research org.	580	-56			14	-11
Total Employment, Technology-Based Sector		192,120	-42,934			5,939	-123

*High tech industries.

^aSource: unpublished data, Oklahoma Employment Security Commission.

^bSource: see footnote a, Table 1.

^cSource: see footnote f, Table 1.

^dCounty Business Patterns, U.S. Department of Commerce, Bureau of the Census.

businesses. Another 9.5 percent were associated with Office, computing and accounting machines—SIC 357. Again, most (72.8%) of these anticipated jobs resulted from planned expansion of existing businesses rather than new establishments.

High Tech R&D Sector:

Oklahoma's high tech R&D sector (indicated by ** in Table 2) consists of just five industries with substantial research and development effort. The Aircraft and parts industry (SIC 372) dominates the sector with over 40 percent of the employment, but it has not been the fastest growing. That distinction goes to Office, computing and accounting machines, which grew at an average annual rate of 13.0 percent. Thus, by 1987 it accounted for almost 38 percent of the sector's employment. As noted before, the Communication equipment industry lost a substantial number of workers.

It is perhaps noteworthy that actual employment in these key industries may have risen only very modestly, but it did rise in the aggregate during this long period of economic stagnation. Between 1983 and 1988, job announcements in these industries accounted for 26 percent of all manufacturing announcements, whereas high tech R&D sector employment currently accounts for 12 percent of manufacturing employment. Substantial announcements were made in three of the sectors—Aircraft and parts, Communication equipment and Office, computing and accounting machines. Most (86.8 percent) of the jobs announced related to expansion of existing businesses even in these technology- and knowledge-based industries.

When actual job changes and new job announcement data are compared, we note that Communication equipment firms reported new jobs related to

investment in existing establishments for nearly 3,500 workers even as actual employment declined by nearly 2,600. Aircraft and parts firms reported over 4,000 new jobs while, in fact, employment declined by over 1,100. In the computer and office machines field, actual employment grew by nearly 3,900 compared to a level of job announcements of only 1,100. It is obviously difficult and risky to relate job announcements and intentions, necessarily reported on a gross basis of only job additions, to the net changes of actual employment and dislocations of the workforce.

Technology-Based Sector: The locally most significant additional industries which employ relatively large numbers of scientific and technical employees include Crude petroleum and natural gas (SIC 161); Heavy Construction, except highway and street (SIC 162); a few selected manufacturing

industries; and several industries in the Transportation, Communications and Public Utilities, Wholesale Trade, and Services sectors.

The two largest industries added in this sector are Crude petroleum and natural gas (SIC 131) and Wholesale trade of machinery, equipment and supplies (SIC 508). In 1982, these two industries contained nearly 35 percent of all technology-based employment. Yet, despite dramatic drops in employment between 1982 and 1987, these industries remained the largest employers even as their contributions fell to 28.5 percent of technology-based employment.

Other large industries added in this sector include Tires and inner tubes (SIC 301); Construction, mining and material handling machinery (SIC 353); General industrial machinery (SIC 356); Motor vehicles and parts (SIC 371); and service sector industries including Radio and TV broadcasting, Electric services, Wholesale trade of electrical goods, Computer and data processing services, and Engineering, architectural, and surveying services.

The two nonmanufacturing sectors which are frequently counted as high tech sectors include Research and development laboratories (SIC 7391), which is small but extremely fast growing in the state, and Computer and data processing services (SIC 737), which has over 3,000 workers and a growth rate for the period exceeding 7.0 percent per year.

Overall, employment in the technology-based industries fell at an average annual rate of nearly 5.0 percent for the 1982-1987 period. Since this loss was substantially greater than for the high technology manufacturing industries, for all nonagricultural employment and for all manufacturing industries, this category of employment fell relative to all others.

It should be noted, however, that much of the decline in the technology-based employment can be associated with a small number of large industries, most of which are associated with the oil industry. Crude petroleum and natural gas lost 16,000 workers; Whole-

sale trade of machinery, equipment and supplies including oil field equipment lost 12,000 workers; Construction, mining, and material handling machinery, including oil field equipment lost 8,500 workers; and Heavy construction, except highways and streets lost 5,500 workers. Together, these four industries accounted for 98 percent of the net job loss of 43,000 workers in the total classification.

Over the same period, the expanded set of manufacturing industries in the technology-based industries performed in a manner slightly superior to all manufacturing industries combined. Average annual employment declines in the manufacturing portion of the technology-based industries were 2.9 percent compared to 3.1 percent for all manufacturing sectors.

In terms of manufacturing industry job announcements, the enlarged technology-based sector accounted for just over one-half of all such anticipated activity. The seven sectors accounting for 80 percent of these job announcements include: Aircraft and parts (4,214); Communication equipment (3,632); Construction, mining, and material handling machinery (2,133); Motor vehicles and equipment (1,205); Office, computing and accounting machines (1,102); Tires and tubes (1,048); and General industrial machinery (1,048). The actual employment change in these sectors between 1982 and 1987 was a loss of 7,200 workers in the face of substantial gains and losses in the individual industries.

Conclusions

Despite, or perhaps because of, the long period of sectoral recession in Oklahoma's traditionally dominant industries related to oil and gas field activity, the period from 1982 to 1987 can be characterized as one of substantial turnover and reallocation along with the generally broad and substantial decline in the overall manufacturing sector. As one looks year-by-year at new plant announcements where announced job growth expectations exceed 100 workers, the list includes such

industries as computer disks (in 1983), computer terminals (in 1984), oil field pumps and large scale disk storage units (in 1985), methanol ether and subsurface oil pumps (in 1986), canister bomb casings (in 1987), and air conditioning equipment, industrial hazardous waste and recycling equipment, heat pumps and airplane overhaul (in 1988). Here, as in the much more numerous job announcements for plant expansions planned for 100 new workers or more, a mix of the high technology and more traditional resource-based industries can be found. High technology industries generally do appear to be somewhat more active in job turnover and creation, but this activity is certainly not to the exclusion of recruitment and expansion in selected lines of the more traditional sectors.

While no definitive analysis explaining the observed pattern of high technology industrial growth in Oklahoma will be attempted here, it is interesting to inquire whether patterns of adjustment to international activity over the past 15 years can be related to local growth and diversification.⁵ Statewide efforts at such export promotion and international investment recruitment have certainly been intensified in response to awareness of these linkages. (Lage, 1988)

Table 1 records the general results of the pattern of international influence on the major manufacturing sectors. Import competition has grown continuously throughout the period from 1974 to 1986 so that imports relative to new supply of imports and domestic production now stand at record high levels. Export growth was fairly strong in the late 1970s; however, in most cases, export sales fell substantially as a proportion of domestic production from 1980 to 1986 as the value of the dollar in international exchange climbed to very high levels through February of 1985 and the rest of the developed market economies went through a severe recessionary period in the early 1980s.

When actual 1982-1987 job changes in Oklahoma technology-based manufacturing industries are correlated

with changes in the share of imports to new supply and the share of exports to domestic shipments, the only substantial positive relationship is with recent export changes. The correlation of job changes (mostly losses) from 1982 to 1987 with the decline in export shares from 1980 to 1986 is +0.44. (The change in the number of establishments from 1982 to 1986 also correlates with the 1980-1986 export pattern with a coefficient of +0.46. Other correlations of Oklahoma employment growth to changes in import or export shares are generally less than 0.1 and of mixed signs.) Evidently, no generally applicable explanation of the pattern of high tech employment change in Oklahoma can be observed from import and/or export competition alone.

Finally, a last word of caution is in order regarding any use of the job announcement data of the Oklahoma Department of Commerce to infer actual patterns of employment change measured by more traditional concepts and procedures of the census process. The measured correlation between the actual job changes from 1982 to 1987 in the U.S. Department of Commerce, Bureau of Economic Analysis, series on full and part-time jobs in the technology-based manufacturing sectors and the job announcements over the 1983 to 1988 reporting periods is a

negative 0.3. Job announcements must be taken (as advertised) as simply an indication of current local economic development flux and not as a predictor of potential net employment change.

Notes

¹Establishments in these four industries accounted for over 60 percent of employment in the high technology sector.

²The announcements do highlight the importance of job expansions for economic development as they accounted for 65 percent of the anticipated job additions in manufacturing sector.

³The latter industry (SIC 376) shows no Oklahoma employment and is therefore frequently omitted from the list.

⁴Because of the lack of job announcement data, two non-manufacturing industries typically associated with this sector are not included here—SIC 737, Computer and Data Processing Services, and SIC 7391, Research and Development Laboratories.

⁵See Martinez, 1988, for a statement of product cycle theory concluding that rural areas may be competitive in attracting high technology industries only after a period of time when both product and process technology has become standardized and, therefore, open to severe international cost-cutting competition as well.

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The authors wish to thank Ms. Marian Martin, Employment Statistics Program Supervisor, Oklahoma Employment Security Commission, for providing the detailed industry employment statistics for 1987.

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